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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,088	09/17/2003	Daniel Stopler	03391/100E915-US1	3721
7278	7590	04/05/2005	EXAMINER	
DARBY & DARBY P.C. P. O. BOX 5257 NEW YORK, NY 10150-5257			KIM, KEVIN	
			ART UNIT	PAPER NUMBER

2634

DATE MAILED: 04/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/664,088	<b>Applicant(s)</b> STOPLER, DANIEL	
	<b>Examiner</b> Kevin Y Kim	<b>Art Unit</b> 2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 17 September 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-21, 54-56, 58 and 59 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21, 54-56, 58 and 59 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/17, 10/07/03</u> | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. Claims 54-56 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 54,55 and 56 each recites “the second encoded data.” But since there is no “encoded data” recited in their respective base claims, the scope of claimed invention is indefinite.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 2634

4. Claims 1-5,7-16,19-21,58 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al (EP 0 673 131 A2, cited by applicant in IDS).

Claims 1 and 58.

Ishikawa et al discloses a method of transmitting data of at least two packets to provide inter-packet interleaving (see Fig. 6), comprising,

inputting data of a first packet, said first packet data comprising a plurality of symbols (1-12);

inputting data of a second packet, said second packet data comprising a plurality of symbols (13-24);

utilizing a plurality of tones, each tone at a different frequency, to transmit the plurality of first packet data symbols and the plurality second packet data symbols (see the frequency axis);

delaying the transmission of successive ones of said first packet data symbols over time (see diagonal distribution of the symbols 1-12) ; and

delaying the transmission of successive ones of said second packet data symbols over time (see diagonal distribution of the symbols 13-24),

such that during at least one symbol period (second symbol period for example), said tones are transmitting at least one first packet data symbol (13) and at least one second packet data symbol (7).

Claim 2.

Art Unit: 2634

Fig.4 shows different bit loading for the tones included in the plurality of tones since each modulation scheme is able to carry a different number of bits.

Claim 3.

As seen in Fig. 6, each of said plurality of tones transmits a single data symbol during a single symbol period.

Claim 4.

The delaying steps delay each successive symbol by a predetermined time period, i.e., 2 symbol periods for example in accordance with Fig.6..

Claim 5.

The predetermined time period is substantially uniform for all data symbols since all data symbols are delayed by 2 symbol periods.

Claims 7 and 8.

Fig.4 illustrates an OFDM technique, which is a form of DMT and VCMT.

Claims 9 and 10.

As mentioned above, Fig.6 shows a “diagonal arrangement of symbols when viewed over time” and they are “grouped into a group.”

Claim 11.

The second data packet (13-24) are arranged as diagonal arrangement when viewed over time and a first symbol (1) of said first packet is transmitted earlier in time with respect to a first symbol (13) of the second packet diagonal arrangements.

Claims 12 and 59.

Ishikawa et al discloses a method of transmitting data of at least two packets to provide inter-packet interleaving (see Fig. 6), comprising,

inputting data of a first packet, said first packet data comprising a plurality of symbols (1-12);

inputting data of a second packet, said second packet data comprising a plurality of symbols (13-24);

utilizing a plurality of modulation codes to transmit the plurality of first packet data symbols and the plurality second packet data symbols (see Fig.4);

delaying the transmission of successive ones of said first packet data symbols over time (see diagonal distribution of the symbols 1-12) ; and

delaying the transmission of successive ones of said second packet data symbols over time (see diagonal distribution of the symbols 13-24),

such that during at least one symbol period (second symbol period for example), said tones are transmitting at least one first packet data symbol (13) and at least one second packet data symbol (7).

Claim 13.

Fig.4 illustrates an OFDM technique, thus comprising “a set of orthogonal codes.”

Claim 14.

As seen in Fig. 6, each of said plurality of tones transmits a single data symbol during a single symbol period.

Claim 15.

The delaying steps delay each successive symbol by a predetermined time period, i.e., 2 symbol periods for example in accordance with Fig.6.

Claim 16.

The predetermined time period is substantially uniform for all data symbols since all data symbols are delayed by 2 symbol periods.

Claims 19 and 20.

As mentioned above, Fig.6 shows a “diagonal arrangement of symbols when viewed over time” and they are “grouped into a group.”

Claim 21.

The second data packet (13-24) are arranged as diagonal arrangement when viewed over time and a first symbol (1) of said first packet is transmitted earlier in time with respect to a first symbol (13) of the second packet diagonal arrangements.

5. Claims 6,17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al as applied to claims 5,16 and 12 respectively.

Claim 6 and 17.

Ishikawa et al disclose all the subject matter claimed, as explained in connection with claim 5 above, except for the fact that “the predefined time period corresponds to a single symbol time period.” However, the distance between consecutive symbols, i.e., “the predefined time period” is variable and chosen to maximize burst error correction. See col. 10, line 45- col. 11, line 4. It suggests that a single symbol time period is an alternative, though seemingly not a preferred embodiment. Thus, it would have been obvious to one skilled in the art at the time the invention was made to delay the symbols by a single symbol time period since it is a most simple approach to interleaving the symbols.

Claim 18.

CDMA is a well known modulation technique for spreading the spectrum of a communication channel for data security and maximizing channel efficiency. Thus, it would have been obvious to one skilled in the art at the time the invention was made to use CDMA instead of or in addition to the modulation techniques shown in Fig.4 of Ishikawa et al for the purpose of maximizing the number of users in the given frequency bandwidth.



Art Unit: 2634

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Y Kim whose telephone number is 571-272-3039. The examiner can normally be reached on 8AM --5PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571-272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Kevin Y Kim*